

REMARKS

In the Office Action, the Examiner noted that claims 1-20 are pending in the application and that claims 1-20 stand rejected. By this response, claims 1 and 12 are amended to more clearly define the invention of the Applicant and not in response to prior art and claims 5 and 18 have been cancelled. All other claims continue unamended by this response.

In view of the amendments presented above and the following discussion, the Applicant respectfully submits that none of these claims now pending in the application are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provisions of 35 U.S.C. § 103. Thus the Applicant believes that all of these claims are now in allowable form.

Rejections

A. 35 U.S.C. § 102

The Examiner rejected claims 1-3, 6-7, 12-17 and 19 under 35 U.S.C. § 102(b) as being anticipated by Tanaka (U.S. Patent 5,764,847). The rejection is respectfully traversed.

The Examiner alleges that regarding claim 1-2, 6-7 and 12, Tanaka in FIG. 2 discloses a system and corresponding method comprising all of the aspects and limitations of the Applicant's invention. The Applicant respectfully disagrees.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1983)) (emphasis added).

The Applicant submits that the Tanaka reference fails to teach, suggest or anticipate each and every element of at least the invention as recited in the Applicant's amended claim 1, which specifically recites:

"A method of recording multiple programs onto a storage medium, comprising the steps of:
 receiving a plurality of multimedia inputs, each having at least one respective, different program therein;
 sampling the multimedia inputs such that the sampled multimedia inputs contain a portion of the plurality of multimedia inputs;

providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency;

combining the sampled multimedia inputs and said at least one dummy input signal; and

encoding the combined multimedia inputs such that the number of encoding devices required to encode the combined multimedia inputs is less than the number of the plurality of programs.” (emphasis added).

The Applicant's invention is directed at least in part to a method for recording multiple programs onto a storage medium and systems for encoding a plurality of programs including sampling the multimedia inputs such that the sampled multimedia inputs contain a portion of the plurality of multimedia inputs, each of the multimedia inputs having at least one respective, different program therein, providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency, combining the sampled multimedia inputs and the at least one dummy input signal and encoding the combined multimedia inputs such that the number of encoding devices required to encode the sampled multimedia inputs is less than the number of the plurality of programs.

In support of the Applicant's invention, at least as claimed by the Applicant's amended, independent claim 1 recited above, the Applicant in the Specification, specifically recites:

“As shown in FIG. 1, the encoding path 110 can include one or more samplers 114 for sampling a corresponding number of video signals. These sampled video signals can then be fed to a video combiner 116, which can combine or merge these sampled video signals. Next, these signals can be encoded by the video encoder 118 and then transferred to a multiplexer 120. The encoding path 110 can also contain one or more samplers in the form of downmixers 122 for sampling or downmixing a corresponding number of audio signals. The downmixed audio signals can then be sent to an audio combiner 123, which can combine the downmixed audio signals. These downmixed audio signals can then be encoded by an audio encoder 124 and transferred to the multiplexer 120, which can multiplex the audio and video signals.” (See Applicant's Specification, page 5, lines 7-17).

And

“Specifically, a plurality of multimedia inputs can be received, and these inputs can be sampled such that the sampled multimedia inputs

contain a portion of the plurality of multimedia inputs. These sampled multimedia inputs can then be combined and encoded such that the number of encoding devices required to encode the sampled multimedia inputs is less than the number of the plurality of multimedia inputs or alternatively, less than the number of sampling devices used to sample the plurality of multimedia inputs." (See Applicant's Specification, page 6, line 22 through page 7, line 4).

The Applicant, in the Specification, further recites:

"In one arrangement, a dummy program signal can be generated, which can then be combined with one or more of the incoming sampled video signals to produce a combination of sampled signals in which the combined resolution of the combined signals - including the dummy signal - is equal to that of a D1 signal. A dummy program signal can be a video signal that contains no programming, i.e., a blank picture. As an example, if three D1 signals are received, it may be desired to sample these signals down to 1/4 D1 signals, as the 1/4 D1 format is a conventional format.

Notably, however, if three D1 signals are received and sampled down to 1/4 D1, the combined lines of resolution do not equal that of a full D1 signal. Significantly, many video encoders operate more efficiently on video signals with the resolution in a D1 signal. Thus, it may be useful to combine a dummy program signal to the 1/4 D1 signals to enable the encoder to operate more efficiently." (See Applicant's Specification, page 7, lines 11-24).

It is clear from at least the portions of the Applicant's disclosure presented above that the Applicant's invention is directed, at least in part, to a method and systems for recording multiple programs onto a storage medium and for encoding a plurality of multimedia input signals comprising various different programs, including sampling multimedia inputs such that the sampled multimedia inputs contain a portion of a plurality of received multimedia inputs and providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency. That is, as taught and claimed by the Applicant, in the claimed embodiments of the Applicant's invention, a dummy signal is a combined with the sampled signals to enable an encoder to operate more efficiently.

The Applicant respectfully submits that Tanaka fails to teach, suggest, disclose or anticipate each and every element of the claimed invention, arranged as in at least the Applicant's amended claim 1. More specifically, the Applicant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Tanaka for a method for recording multiple programs onto a storage medium

and systems for encoding a plurality of multimedia input signals having respective, different programs therein including at least "providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency" and "combining the sampled multimedia inputs and said at least one dummy input signal" as taught in the Applicant's Specification and claimed in at least the Applicant's amended claim 1.

Instead, Tanaka teaches a digital signal recording apparatus arranged to be capable of permitting long-time recording on one and the same recording medium without impairing the quality of audio signals at all. In Tanaka the apparatus has a first mode in which a digital video signal supplied from a video input circuit and having the amount of information not compressed by a video compression circuit is recorded on the recording medium by a recording circuit while all of n channel digital audio signals supplied from an audio input circuit are recorded by the recording circuit; and a second mode in which the digital video signal having the amount of information compressed by the video compression circuit and only part of the n channel digital audio signals supplied from the audio input circuit are recorded by the recording circuit. (See Tanaka, Abstract).

The Applicant respectfully submits, however, that Tanaka absolutely fails to teach, suggest or anticipate at least "providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency" and "combining the sampled multimedia inputs and said at least one dummy input signal" as taught in the Applicant's Specification and claimed in at least the Applicant's amended claim 1. That is, Tanaka absolutely fails to teach, suggest or anticipate generating or providing a dummy program signal which can then be combined with one or more of the incoming sampled video signals to produce a combination of sampled signals for improving the efficiency of encoding. In one embodiment of the Applicant's invention, dummy signals are generated and combined with sampled multimedia signals such that the combined resolution of the combined signals - including the dummy signal - is equal to that of a D1 signal.

As such and at least because the teachings of Tanaka fail to teach, suggest or anticipate at least a method for recording multiple programs onto a storage

medium and systems for encoding a plurality of multimedia input signals having multiple programs including at least "providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency" and "combining the sampled multimedia inputs and said at least one dummy input signal" as taught in the Applicant's Specification and claimed in at least the Applicant's amended claim 1, the Applicant respectfully submits that the teachings and disclosure of Tanaka do not anticipate the Applicant's invention, at least with respect to claim 1. That is, Tanaka fails to disclose each and every element of the claimed invention, arranged as in the Applicant's claim as required for anticipation.

Therefore, the Applicant submits that for at least the reasons recited above independent claim 1 is not anticipated by the teachings of Tanaka and, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

Likewise, independent claims 12 and 20 recite similar relevant features as recited in the Applicant's independent claim 1. As such, the Applicant submits that for at least the reasons recited above independent claims 12 and 20 are also not anticipated by the teachings of Tanaka and also fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

Furthermore, dependent claims 2-3, 6-7, 13-17 and 19 depend either directly or indirectly from independent claims 1, 12 and 20 and recite additional features therefor. As such and for at least the reasons set forth herein, the Applicant submits that dependent claims 2-3, 6-7, 13-17 and 19 are also not anticipated by the teachings of Tanaka. Therefore the Applicant submits that dependent claims 2-3, 6-7, 13-17 and 19 also fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

B. 35 U.S.C. § 103

The Examiner rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Tanaka in view of Campbell et al. (U.S. Patent 4,967,271, hereinafter "Campbell"). The rejection is respectfully traversed.

The Examiner states that at the time the invention was made it would have been obvious to a person of ordinary skill in the art to modify the invention of Tanaka to include the teachings of Campbell to make obvious the Applicant's claim 4. The Applicant respectfully disagrees.

As recited above and for at least the reasons recited above, the Applicant respectfully submits that the teachings of Tanaka alone fail to teach, suggest or anticipate the Applicant's amended independent claim 1. As such, the Applicant further submits that the teachings of Tanaka also fail to teach, suggest, anticipate or make obvious the Applicant's claim 4, which depends indirectly from the Applicant's independent claim 1 and recites additional features therefor.

In addition, the Applicant respectfully submits that the teachings of Campbell alone, also do not teach, suggest, anticipate or make obvious the invention of the Applicant, at least with respect to independent claim 1 and, as such, dependent claim 4. Moreover, the Applicant respectfully submits that the teachings of Campbell fail to bridge the substantial gap between the Applicant's invention and the teachings of Tanaka. That is, as described above, the Applicant respectfully submits that Tanaka fails to teach, suggest or anticipate at least a method for recording multiple programs onto a storage medium and systems for encoding a plurality of multimedia input signals having multiple programs including at least "providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency" and "combining the sampled multimedia inputs and said at least one dummy input signal" as taught in the Applicant's Specification and claimed in at least the Applicant's amended claim 1. The Applicant further submits that Campbell also fails to teach, suggest or make obvious at least a method for recording multiple programs onto a storage medium and systems for encoding a plurality of multimedia input signals having multiple programs including at least "providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency" and "combining the sampled multimedia inputs and said at least one dummy input signal" as taught in the Applicant's Specification and claimed in at least the Applicant's amended claim 1.

More specifically, the teachings of Campbell for a Television scan line doubler including temporal median filter fail to bridge the substantial gap between the Applicant's invention and the teachings of Tanaka. The Applicant submits that there is absolutely no teaching or suggestion in Campbell for providing a dummy program signal which can then be combined with one or more of the incoming sampled video signals to produce a combination of sampled signals for improving the efficiency of encoding. For example, the Applicant teaches that in one embodiment of the Applicant's invention, dummy signals are generated and combined with sampled multimedia signals such that the combined resolution of the combined signals - including the dummy signal - is equal to that of a D1 signal.

As such, the Applicant submits that the teachings of Tanaka and Campbell, alone or in any allowable combination also fail to teach, suggest, anticipate or make obvious the Applicant's claim 4, which depends indirectly from the Applicant's independent claim 1 and recites additional features therefor.

Therefore, the Applicant submits that dependent claim 4, as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

C. 35 U.S.C. § 103

The Examiner rejected claims 5, 18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Tanaka in view of Sato et al. (U.S. Patent 5,566,174, hereinafter "Sato"). The rejection is respectfully traversed.

The Examiner states that at the time the invention was made it would have been obvious to a person of ordinary skill in the art to modify the invention of Tanaka to include the teachings of Sato to make obvious the Applicant's claims 5, 18 and 20. The Applicant respectfully disagrees.

As recited above and for at least the reasons recited above, the Applicant respectfully submits that the teachings of Tanaka alone fail to teach, suggest or anticipate the Applicant's independent claims 1, 12 and 20. As such, the Applicant

further submits that the teachings of Tanaka also fail to teach, suggest, anticipate or make obvious the subject matter of the Applicant's claims 5 and 18. Although the Applicant has cancelled claims 5 and 18 herein, the limitations of claims 5 and 18 have been added to the Applicant's claims 1 and 12, respectively.

Firstly, the Applicant submits that there is absolutely no motivation or suggestion in either reference for the combination of the references of Tanaka and Sato to attempt to teach the invention of the Applicant. More specifically, there is no motivation or suggestion in the teachings of Tanaka for an audio signal recording apparatus for the combination of the references and likewise, the invention of Sato for an MPEG information signal conversion system does not expressly or impliedly motivate or suggest such a combination as required for the combination of references under 35 U.S.C. § 103. The references teach different inventions and solutions for solving absolutely unrelated deficiencies in the prior art. That is, Tanaka is directed to a digital video and audio signal recording apparatus which is capable of retaining adequate tone quality even with small amounts of audio information and Sato is directed to a system for recording and playback of MPEG information using a DVCR including a method of transmitting timing critical data via an asynchronous channel.

That is, for prior art reference to be combined to render obvious a subsequent invention under 35 U.S.C. § 103, there must be something in the prior art as a whole which suggests the desirability, and thus the obviousness, of making the combination. Uniroyal v. Rudkin-Wiley, 5 U.S.P.SQ.2d 1434, 1438 (Fed. Cir. 1988). The teachings of the references can be combined only if there is some suggestion or incentive in the prior art to do so. In re Fine, 5 U.S.P.SQ.2d 1596, 1599 (Fed. Cir. 1988). ***Hindsight is strictly forbidden. It is impermissible to use the claims as a framework to pick and choose among individual references to recreate the claimed invention*** Id. at 1600; W.L. Gore Associates, Inc., v. Garlock, Inc., 220 U.S.P.Q. 303, 312 (Fed. Cir. 1983). (emphasis added).

Moreover, the mere fact that a prior art structure could be modified to produce the claimed invention would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 23

U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992); In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

Even further, the Applicant submits that even if there was a motivation to combine the references (which the Applicant maintains that no such motivation exists), the teachings of Sato fail to bridge the substantial gap between the teachings of Tanaka and the Applicant's invention at least with respect to independent claims 1, 12 and 20.

More specifically, with respect to cancelled claims 5 and 18, the limitations of which are now claimed in the Applicant's amended claims 1 and 12 and claim 20, the Examiner cites Sato for teaching that when recording to a tape recording medium, wherein an input having an unknown rate can be varying and/or bursty, providing a means to input dummy data met by a NULL packet generator thereby to process the video to a known rate fixed and constant in order to record to the DVCR. That is, Sato teaches adding NULL packets such that a DVCR can reconstruct at playback a transport stream without loss of information. In addition, Sato specifically recites:

"...these null packets 49 are used merely to fill gaps in the recording stream and serve no MPEG function. (See Sato, col. 9, lines 30-31).

As such, if the teachings of Sato were combined with the teachings of Tanaka, the Applicant respectfully submits that such combination would absolutely fail to teach, suggest, anticipate or make obvious the invention of the Applicant at least with respect to the Applicant's amended, independent claims 1 and 12 and claim 20. That is, a combination of the teachings would result in a digital signal recording apparatus arranged to be capable of permitting long-time recording on one and the same recording medium without impairing the quality of audio signals at all, where the apparatus has a first mode in which a digital video signal supplied from a video input circuit and having the amount of information not compressed by a video compression circuit is recorded on the recording medium by a recording circuit while all of n channel digital audio signals supplied from an audio input circuit are recorded by the recording circuit; and a second mode in which the digital video signal having the amount of information compressed by the video compression

circuit and only part of the n channel digital audio signals supplied from the audio input circuit are recorded by the recording circuit, where during playback null packets are added to a transport stream such that the recording apparatus can playback a transport stream without loss of information. Moreover, combining the teachings of Sato for adding NULL packets to a transport stream can compromise the invention of Tanaka for a digital video and audio signal recording apparatus which is capable of retaining adequate tone quality even with small amounts of audio information. As such, a combination of the references is not only not suggested in either reference, but also would be considered undesirable by those skilled in the art because combining the references would compromise the functionality of at least the invention of Tanaka.

As such, the Applicant respectfully submits that the combination of the teachings of Tanaka and Sato fail to teach, suggest, anticipate or make obvious at least a method for recording multiple programs onto a storage medium and systems for encoding a plurality of multimedia input signals having multiple programs including at least "sampling the multimedia inputs such that the sampled multimedia inputs contain a portion of the plurality of multimedia inputs" and "providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency" and "combining the sampled multimedia inputs and said at least one dummy input signal" as taught in the Applicant's Specification and claimed in at least the Applicant's amended independent claims 1 and 12 and independent claim 20.

More specifically and as previously recited above, in support of the invention, the Applicant, in the Specification, specifically recites:

"At step 212, these multimedia inputs can be sampled such that the sampled multimedia inputs contain a portion of the plurality of multimedia inputs. For example, the resolution of the pictures contained in each of the plurality of multimedia inputs that are sampled can be less than the resolution of the pictures contained in each input prior to the sampling process. A number of sampling techniques can be employed to perform this step. As an example, if video is being received, then the resolution of the video signal can be reduced by removing lines of resolution or by removing pixels from the pictures contained in the video signals. If audio is

being received, then each audio signal can be sampled or downmixed by removing one or more channels of audio contained in each of the audio signals." (See Applicant's Specification, page 7, lines 11-24).

And

"In one arrangement, a dummy program signal can be generated, which can then be combined with one or more of the incoming sampled video signals to produce a combination of sampled signals in which the combined resolution of the combined signals - including the dummy signal - is equal to that of a D1 signal. A dummy program signal can be a video signal that contains no programming, i.e., a blank picture. As an example, if three D1 signals are received, it may be desired to sample these signals down to 1/4 D1 signals, as the 1/4 D1 format is a conventional format.

Notably, however, if three D1 signals are received and sampled down to 1/4 D1, the combined lines of resolution do not equal that of a full D1 signal. Significantly, many video encoders operate more efficiently on video signals with the resolution in a D1 signal. Thus, it may be useful to combine a dummy program signal to the 1/4 D1 signals to enable the encoder to operate more efficiently." (See Applicant's Specification, page 7, lines 11-24).

The Applicant respectfully submits that Tanaka and Sato, alone or in any allowable combination, fail to teach, suggest, anticipate or make obvious at least "sampling the multimedia inputs such that the sampled multimedia inputs contain a portion of the plurality of multimedia inputs" as taught in the Applicant's Specification and claimed by at least the Applicant's independent, amended claims. That is, Tanaka and Sato fail to teach, suggest, anticipate or make obvious sampling such that the resolution of the pictures contained in each of the plurality of multimedia inputs that are sampled can be less than the resolution of the pictures contained in each input prior to the sampling process as taught in an embodiment of the Applicant's invention. Instead Tanaka teaches separating portions of a SINGLE audio or video signal for compression and Sato only teaches receiving a single signal.

The Applicant further submits that Tanaka and Sato, alone or in any allowable combination, fail to teach, suggest, anticipate or make obvious at least "providing at least one dummy input signal to be combined with the sampled multimedia inputs to improve encoding efficiency" as taught in the Applicant's Specification and claimed by at least the Applicant's independent, amended claims. Instead, Sato teaches inserting NULL packets such that a DVCR can reconstruct at playback a transport stream without loss of information and fails to

teach, suggest, anticipate or make obvious providing dummy signals to be combined with the sampled multimedia inputs to improve encoding efficiency. Tanaka is silent regarding Null packets or dummy signals.

Even further the Applicant submits that Tanaka and Sato, alone or in any allowable combination, fail to teach, suggest, anticipate or make obvious at least "combining the sampled multimedia inputs and said at least one dummy input signal" as taught in the Applicant's Specification and claimed in at least the Applicant's amended independent claims. Instead, Sato teaches inserting NULL packets such that a DVCR can reconstruct at playback a transport stream without loss of information and not providing dummy signals to be combined with the sampled multimedia inputs to improve encoding efficiency and Tanaka teaches recombining portions of a single audio or video signal for encoding and is silent regarding combining dummy signals with sampled signals.

As such and for at least the reasons recited above, the Applicant respectfully submits that the teachings of Tanaka and Sato, alone or in any allowable combination, fail to teach, suggest or make obvious the invention of the Applicant with regard to at least the Applicant's amended independent claims 1 and 12 and independent claim 20, which contain limitations similar to those of cancelled claims 5 and 18.

Therefore, the Applicant submits that at least the Applicant's amended, independent claims 1 and 12 and claim 20, as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

D. 35 U.S.C. § 103

The Examiner rejected claims 8-11 under 35 U.S.C. § 103(a) as being unpatentable over Tanaka. The rejection is respectfully traversed.

As recited above and for at least the reasons recited above, the Applicant respectfully submits that the teachings of Tanaka alone fail to teach, suggest or anticipate the Applicant's independent claim 1. As such, the Applicant further submits that the teachings of Tanaka also fail to teach, suggest, anticipate or make

obvious the Applicant's claims 8-11, which depend indirectly from the Applicant's independent claim and recite additional features therefor.

As such and for at least the reasons recited above, the Applicant respectfully submits that the teachings of Tanaka fail to teach, suggest or make obvious the invention of the Applicant with regard to at least the Applicant's independent claim 1. As such, the Applicant further submits that the teachings of Tanaka also fail to teach, suggest or make obvious the invention of the Applicant with regard to dependent claims 8-11, which depend indirectly from the Applicant's independent claim 1 and recite further features thereof.

Therefore, the Applicant submits that dependent claims 8-11, as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

Conclusion

In the Office Action, the Examiner conceded that there were differences in the teachings and invention of the Applicant's Specification and the cited references. The Applicant respectfully submits that the amendments presented herein specifically claim the differences between the teachings of the Applicant's Specification and the teachings of the cited references.

As such, the Applicant submits that none of the claims, presently in the application, are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provisions of 35 U.S.C. § 103. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion, it is respectfully requested that the Examiner telephone the undersigned.

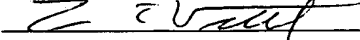
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No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account No. 07-0832.

Respectfully submitted,
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